4

	Application No.	Applicant(s)
Notice of Allowability	10/781,488	TROPF, HERMANN
	Examiner	Art Unit
	Charles D. Adams	2164

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *Request for Continued Examination of 16 May 2007*.

2. ☒ The allowed claim(s) is/are *1,2 and 4-20*.

3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

     a) ☐ All   b) ☐ Some*   c) ☒ None   of the:

        1. ☒ Certified copies of the priority documents have been received.

        2. ☐ Certified copies of the priority documents have been received in Application No. _____ .

        3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

     * Certified copies not received: *EPO Application 03 003 692.5*.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application. **THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.

     (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached

        1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.

     (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _.

     Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)

2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)

3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____

4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material

5. ☐ Notice of Informal Patent Application

6. ☒ Interview Summary (PTO-413), Paper No./Mail Date *18 July 2007* .

7. ☒ Examiner's Amendment/Comment

8. ☒ Examiner's Statement of Reasons for Allowance

9. ☐ Other _____.

CHARLES RONES
SUPERVISORY PATENT EXAMINER

EXAMINER'S AMENDMENT

Remarks

1.   In response to communications filed on 16 May 2007, claims 7-20 are added per

applicant's request. Claims 1-20 are pending in the application.

Examiner's Amendment

2.   An examiner's amendment to the record appears below. Should the changes

and/or additions be unacceptable to applicant, an amendment may be filed as provided

by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be

submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview

with Thomas M. Champagne on 18 July 2007.

In Claims:

3.   Please replace claims 1-2 and 6 with amended claims 1-2 and 6, and cancel

claim 3, as listed below:

1. (Currently Amended) A database system <u>and a processor</u> for organizing data

elements according to a Hilbert curve, said data elements being representable by a

plurality of coordinates, said database system comprising:

first means for generating a plurality of bitblocks by bitwise interleaving the coordinates

of the data elements;

second means for applying a fliprot transformation to a first bitblock;

said fliprot transformation comprising a flip transformation and a rotation transformation,

said flip transformation inverting bits of said first bitblock, said rotation transformation

interchanging bits of said first bitblock;

wherein said rotation transformation of said first bitblock and said rotation

transformation of each further bitblock cyclically shifts the bits of each respective

bitblock;

third means for obtaining, for said each further bitblock, a fliprot transformation by a

concatenation of two or more fliprot transformations;

fourth means for applying fliprot transformations to their each further corresponding

bitblock;

fifrth means for accessing said data elements;

whereby the bitblock bits bits of said each respective bitblock determine the

organization of said data elements according to said Hilbert curve.

2. (Currently Amended) A method of organizing data elements of a database

according to a Hilbert curve, said data elements being representable by a plurality of

coordinates, said method comprising the following steps:

generating a plurality of bitblocks by bitwise interleaving the coordinates of the data

elements;

applying a predetermined fliprot transformation to a first bitblock;

said fliprot transformation comprising a flip transformation and a rotation transformation,

said flip transformation inverting bits of said first bitblock, said rotation transformation

interchanging bits of said first bitblock;

wherein said rotation transformation of said first bitblock and said rotation

transformation of each further bitblock cyclically shifts the bits of each respective

bitblock;

for said each further bitblock, obtaining a fliprot transformation by a concatenation of

two or more fliprot transformations;

applying fliprot transformations to their each further corresponding bitblock;

accessing said data elements;

whereby the bitblock bits bits of said each respective bitblock determine the

organization of said data elements according to said Hilbert curve.

3. (Cancelled)

4. (Currently amended) The method of claim 2, wherein organizaing is a means

for at least one of searching, sorting, storing, retrieving, inserting, deleting, querying, or

range querying[,] data elements in said database system.

5. (original) The method of claim 2 for range querying data elements in said

database, with a BIGMIN calculation including a candidate calculation wherein said

candidate is kept in form of rectangle data.

6. (Currently amended) A computer-readable data storage medium for storing

program code for executing, when being loaded into a computer, the following steps:

generating a plurality of bitblocks by bitwise interleaving the coordinates of the data

elements;

applying a predetermined fliprot transformation to a first bitblock;

said fliprot transformation comprising a flip transformation and a rotation transformation,

said flip transformation inverting bits of said first bitblock, said rotation transformation

interchanging bits of said first bitblock;

wherein said rotation transformation of said first bitblock and said rotation

transformation of each further bitblock cyclically shifts the bits of each respective

bitblock;

for said each further bitblock, obtaining a fliprot transformation by a concatenation of

two or more fliprot transformations;

applying fliprot transformations to their each further corresponding bitblock;

accessing said data elements;

whereby the bitblock bits bits of said each respective bitblock determine the

organization of said data elements according to said Hilbert curve.

7. (new) The database system of claim 1, wherein the fifth means for accessing said data elements includes means for loading said data elements into RAM to be used by a local application.

8. (new) The database system of claim 1, wherein the fifth means for accessing said data elements includes means for providing said data elements to an output device.

9. (new) The database system of claim 8, wherein the fifth means for accessing said data elements includes means for providing said data elements ot at least one of a display device and a printing device.

10. (new) The database system of claim 1, wherein the fifth means for accessing said data elements includes means for at least one of reading, writing, and modifying said data elements.

11. (new) The database system of claim 1, wherein the fifth means for accessing said data elements includes means for copying said data elements to a memory device.

12. (new) The method of claim 2, wherein accessing said data elements includes loading said data elements into RAM to be used by a local application.

13. (new) The method of claim 2, wherein accessing said data elements includes providing said data elements to an output device.

14. (new) The method of claim 13, wherein accessing said data elements includes providing said data elements to at least one of a display device and a printing device.

15. (new) The method of claim 2, wherein accessing said data elements includes at least one of reading, writing, and modifying said data elements.

16. (new) The method of claim 2, wherein accessing said data elements includes copying said data elements to a memory device.

17. (new) The database system of claim 1, wherein inverting bits of said first bitblock includes inverting values of the bits of said first bitblock.

18. (new) The database system of claim 1, wherein interchanging bits of said first bitblock includes performing a one-dimensional shift of the bits of said first bitblock.

19. (new) The method of claim 2, wherein inverting bits of said first bitblock includes inverting values of the bits of said first bitblock.

20. (new) The method of claim 2, wherein interchanging bits of said first bitblock

includes performing a one-dimensional shift of the bits of said first bitblock.

Allowable Subject Matter

4.   Claims 1-2 and 4-20 are allowed.

The following is an examiner's statement of reasons for allowance:

The prior art of record, alone or in combination, does not teach or fairly suggest

the combination of steps as recited in independent claims 1, 2, and 6 wherein the

limitations "second means for applying a flip transformation to a first bitblock; said fliprot

traqnsformation comprising a flip transformation and a rotation transformation, said flip

transformation inverting bits of said first bitblock, said rotation transformation

interchanging bits of said first bitblock" and "wherein said rotation transformation of said

first bitblock and said rotation transformation of each said further bitblock cyclically shifts

the bits of said respective bitblock "are taught. No prior art of record teaches this

specific transformation of bitblocks.

Any comments considered necessary by applicant must be submitted no later

than the payment of the issue fee and, to avoid processing delays, should preferably

accompany the issue fee. Such submissions should be clearly labeled "Comments on

Statement of Reasons for Allowance."

Conclusion

5.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles D. Adams whose telephone number is (571) 272-3938. The examiner can normally be reached on 8:30 AM - 5:00 PM, M - F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Rones can be reached on (571) 272-4085. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

CHARLES RONES
SUPERVISORY PATENT EXAMINER

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